



Attorney Docket: 178/48916

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: GUNNAR-MARCEL KLEIN ET AL.

Serial No.: 09/555,140

Group Art Unit: 1723

Filed: AUGUST 3, 2000

Examiner: M. SAVAGE

Title: FILTER ELEMENT

APPEAL BRIEF UNDER 37 C.F.R. §1.192

This appeal brief is submitted in triplicate and is accompanied by a check in the amount of \$320.00 in payment of the appeal brief fee. This response is timely by virtue of a petition for a two-month extension of time concurrently filed, along with the requisite fee. If the check becomes detached, or if there is any deficiency, please charge any required fee to the Deposit Account 05-1323 (Docket No. 178/48916).

This is an appeal from the January 17, 2002 final rejection of claims 13, 15-22 and 35 in the above-captioned application.

Real Party in Interest

This application is assigned to Filterwerk Mann & Hummel GmbH of Ludwigsburg, Germany, which is the real party in interest in this appeal.

Related Appeals and Interferences

Applicants and their counsel are not aware of any related appeals or interferences which would affect, be affected by, or have a bearing on the instant appeal.

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Status of Claims

Claims 13, 15-22 and 25-35 are pending. Claims 25-34 have been withdrawn from consideration. Claims 13, 15-22 and 35 are finally rejected and form the subject of this appeal.

Status of Amendments

There are no unentered amendments.

Summary of Invention

The claimed invention is directed to a filter element 1 that includes a plurality of filter medium layers 2, 3, 5, 7, 8 joined together such that a fluid to be filtered flows successively through the layers 2, 3, 5, 7, 8 in the direction of fluid flow commencing with an inflow layer 2, 7 and ending with a discharge layer 3, 8. The successive layers 2, 3, 5, 7, 8 of the filter element 1 have an increasing degree of separation and a decreasing storage capacity for particles to be filtered. The inflow layer 2, 7 may include synthetic fibers of a melt-blown nonwoven web with a weight per unit area of approximately 15 to 150 g/m², and the discharge layer 3, 8 may include a predominantly cellulose-containing compressed filter paper having a weight per unit area of about 50 to 200 g/m². Alternatively, the inflow layer 2, 7 may include synthetic fibers of a predominantly cellulose-containing filter paper with a weight per unit area of 50 to 200 g/m².

The claimed invention has various advantages over the prior art. For example, it provides improved filtering which can be maintained over an extended period of time. This advantage is achieved with several features of the claimed invention. For example, with an increasing degree of separation and a decreasing storage capacity, the filter element 1 uses the inflow layers to remove and store larger

particles and the discharge layers to remove and store smaller particles, allowing the entire filter volume to be used for particle separation and storage thus increasing the service life of the filter element 1. Moreover, the use of a melt-blown non-woven web for the inflow layer 2, 7 is advantageous since it provides a very high storage capacity for particles filtered from the fluid while having a low resistance to fluid flow.

Rejections

Claims 13, 15-22 and 35 stand rejected under 35 U.S.C. 112, first paragraph, for allegedly containing subject matter which is not described in the specification. The Examiner cited two grounds of rejection. First, the Examiner asserts that the specification fails to adequately disclose how to make a filter element having the weight per unit area values recited in claims 13 and 35, since the thickness or density of the filter layers has not been disclosed. Second, the Examiner asserts that the specification fails to adequately disclose the methods of joining the filter layers as recited in claims 18-20.

Claims 13, 15-22, and 35 stand rejected under 35 U.S.C. 112, second paragraph, for allegedly being indefinite. The Examiner asserts that the claim language "predominantly cellulose containing filter paper" is unclear.

Claims 13, 15-19, 21, and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kadoya (U.S. Patent 4,976,858).

Claim 20 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kadoya in view of JP 63-278517.

Claim 22 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Kadoya* and further in view of *Pall* (U.S. Patent 4,033,881) or *Girondi* (U.S. Patent 6,077,391).

Issues

The issues on appeal are as follows:

1. Whether a person of ordinary skill in the filtration art acting in accordance with standard industry practices can make and use filter layers having a specified weights per unit area, as claimed, without advance specification of precise thickness or density parameters?

2. Whether a specification, which explicitly teaches that multiple filter layers can be joined by the known techniques of welding by ultrasound, joining by application of surface pressure during folding, or gluing with adhesive, is sufficient to enable a person of ordinary skill in the filtration art to make a filter comprising a plurality of joined layers as claimed?

3. Whether the specification provides sufficient guidance to one with ordinary skill in the art to determine the meaning of the claim language "predominantly cellulose containing filter paper" when the specification teaches that the cellulose content of cellulose containing filter paper can be 50% or more?

4. Whether a filter element comprising multiple layers having a successively decreasing storage capacity and including an inflow layer comprising a melt-blown, non-woven synthetic fiber web and a discharge layer comprising a compressed filter paper, is rendered obvious by a reference or a combination of references which describe only filter media having different densities and different abilities to separate particles of

different sizes, but which fail to disclose filter layers having a decreasing storage capacity in the direction of flow, or an inflow layer comprising a melt-blown non-woven synthetic fiber web, or a discharge layer of compressed filter paper?

Grouping of Claims

As to the rejection of claims 13, 15-22 and 35 under 35 U.S.C. 112, first paragraph, on the ground that the specification fails to adequately disclose how to make the filter elements, claims 13, 15-22 and 35 stand or fall together.

As to the rejection of claims 18-20 under 35 U.S.C. 112, first paragraph, on the ground that the specification fails to adequately disclose the methods of joining the filter layers, claims 18-20 do not stand or fall together as each has separate patentability.

As to the rejection of claims 13, 15-22, and 35 under 35 U.S.C. 112, second paragraph, as being indefinite on the ground that the claim language "predominantly cellulose containing filter paper" is unclear, claims 13, 15-22, and 35 stand or fall together.

As to the rejection of claims 13, 15-19, 21, and 35 under 35 U.S.C. §103(a) as being unpatentable over *Kadoya* (U.S. Patent 4,976,858), claims 13, 15, 17-19, 21 and 35 stand or fall together. Claim 16 is separately patentable.

Argument

1. A person of ordinary skill in the filtration art acting in accordance with standard industry practices can make and use filter layers having a specified weights per unit area, as claimed, without advance specification of precise thickness or density parameters.

The Examiner rejects claims 13, 15-22 and 35 under 35 U.S.C. 112, first paragraph, as containing subject matter which is not described in the specification. With respect to claims 13 and 35, the Examiner stated that the specification fails to adequately disclose how to make the filter element having the recited weight per unit area values of the inflow and discharge layers, because the specification does not disclose the thickness or density of the inflow and discharge layers.

In response to this rejection, Applicants submitted a Declaration from Dr. Klein, an expert in the field of filtration technology, to support their position that the specification adequately discloses how to make the claimed filter element.

As set forth in his Declaration, Dr. Klein, the author of more than ten scientific papers, is an experienced expert in the field of filtration technology. He has a doctorate in the field of filtration technology and has worked for more than ten years in this field at universities and in the industry.

In his Declaration, based on his education and experience in the field of filtration technology, Dr. Klein concludes that the specification of the present application adequately discloses how to make the claimed filter element to a person of ordinary skill in the art. He points out that to practice the claimed invention, as long as the specific weights of the filter layers are within the claimed ranges, it is not important what the other parameters of the filter layers are. According to Dr. Klein, a person with ordinary skill in the art can select a desired thickness or density and can vary other parameters, such as the coarseness and kind of fibers as well as the structure and arrangement of the fibers in the fiber layers, to achieve the given specific weight.

Dr. Klein further points out,

The porosity of the filter layers is not the only parameter that determines the degree of separation and storage capacity of the filter layers. Other parameters, such as the fiber structure of the filter layers, are also important. Therefore, it is not necessary for the inventors to specify the porosity of the filter layers in the context of the claimed invention. It is important only that the filter layers have an increasing degree of separation and a decreasing storage capacity, and their specific weights are in the claimed ranges. One of ordinary skill in the art can then select the thickness, density, porosity and other parameters in accordance with the teaching of the subject application and the requirements of the specific application. In fact, if the inventors were to specify the porosity (or thickness and density) of the filter layers in the claims, a competitor could easily design around the patent by selecting a different porosity (or thickness and density) to achieve the same result.

Although Dr. Klein Declaration establishes that the specification adequately discloses the claimed invention, the Examiner refused to consider Dr. Klein's Declaration, citing *In re Lindell*, 385 F.2d 453, 155 USPQ 521 (C.C.P.A. 1967) (see the Advisory Action issued on July 5, 2002). According to the Examiner, *In re Lindell* supports the proposition that expert opinion that an application meets the requirements under 35 U.S.C. 112 is not entitled to any weight.

Applicants submit that the Examiner's refusal to consider Dr. Klein's Declaration is based on erroneous legal ground. First, the Examiner's reading of *In re Lindell* is wrong. *In re Lindell* does not stand for the proposition that expert opinion that an application meets the requirements under 35 U.S.C. 112 is not entitled to any weight. In fact, it does not even address a rejection under 35 U.S.C. 112.

In re Lindell addresses an obviousness rejection and actually takes expert opinion into consideration in determining whether the rejection is proper. With regard to Applicant's own affidavit submitted to overcome an obviousness rejection, the court states that Applicant's opinion on the ultimate legal issue is not evidence in the case, although some weight ought to be given to a persuasively supported statement of one skilled in the art on what was obvious to him. The court then considers the Applicant's affidavit but thinks that the inferences from the art of record are too strong to be affected by the weight to which the affidavit is entitled. Therefore, it is incorrect to say that the court in *In re Lindell* refuses to give any weight to expert opinion.

Additionally, in contrast to the Examiner's refusal to consider expert opinion, both the PTO and courts have considered expert opinions in determining whether applications meet the requirements of 35 U.S.C. 112. See, e.g., *Scripps Clinic and Research Foundation v. Genentech Inc.*, 6 USPQ2d 1018, 1021 (N.D. Cal. 1988) (in discussing prosecution history, the court points out, without objection, that the Examiner withdrew a rejection for lack of enablement on the basis of amendment and expert declaration); *LifeScan Inc. v. Polymer Technology International Corp.*, 35 USPQ2d 1225, 1233 (W.D. Wash. 1995) (on the basis of expert opinion, the court rejects a motion for summary judgment of invalidity of a patent pursuant to 35 U.S.C. 112).

Accordingly, the Examiner should consider Dr. Klein's Declaration in determining whether the specification meets the requirements of 35 U.S.C. 112.

In addition to Dr. Klein's Declaration, Applicants would like to add the following. The inventors found the specific weights of the inflow and discharge layers to be important to

achieve the objects of the claimed invention. That was why the inventors specified the specific weights of the inflow and discharge layers in the specification and recited them in the claims. Although other parameters, such as thickness, density, and fiber structure, are necessary to make a specific filter layer, they are not important to achieve the objects of the present invention. To make the claimed invention in a specific application, a person with ordinary skill in the art can determine these other parameters in accordance with the requirements of the specific application without undue experimentation. Such a person can do so because the filter art is well developed and very predictable, and have well established industry practices.

Applicants' position is supported by Dr. Klein, an expert in the field of filtration. In contrast, the Examiner fails to provide any support for his position, other than his personal opinion. Specifically, the Examiner fails to provide any evidence that contradicts Dr. Klein's statement that to make the claimed filter element, one of ordinary skill in the art can select the thickness, density, porosity and other parameters in accordance with the teaching of the subject application and the requirements of the specific application.

The Examiner's position is also rather arbitrary. The Examiner requires the disclosure of the thickness or density of the filter layers but does not require the disclosure of both thickness and density. He also does not require the disclosure of other parameters necessary to make the claimed filter element, such as the coarseness of the fiber and the kind of fiber as well as the structure and arrangement of the fiber in the fiber layers. In addition, the Examiner fails to explain why "the thickness or density" is required to meet the requirements of Section 112 while the other parameters are not.

The arbitrariness of the Examiner's requirement indicates that the requirement is without reasoned basis.

Therefore, reversal of the rejection is respectfully requested.

2. A specification, which explicitly teaches that multiple filter layers can be joined by the known techniques of welding by ultrasound, joining by application of surface pressure during folding, or gluing with adhesive, is sufficient to enable a person of ordinary skill in the filtration art to make a filter comprising a plurality of joined layers as claimed.

Claims 18-20 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which is not described in the specification. The Examiner asserts that the specification fails to adequately disclose the methods of joining the filter layers as recited in claims 18-20.

Applicants respectfully submit that, contrary to the Examiner allegation, the specification adequately discloses each of the methods of joining the filter layers recited in claims 18-20. At page 5, the second full paragraph, the specification recites,

In particular the layers of filter media can be welded by ultrasound or joined by applying surface pressure during the folding process before or during folding, for example on an embossing and folding machine. The layers can also be glued with an adhesive whereby a powdered adhesive or a hot melt impregnating agent also can be used.

These disclosed methods of joining the filter layers are well known in the art, and a person with ordinary skill in the art can use each of the claimed methods to join the filter layers without undue experimentation. For example, the use of adhesive to glue filter layers is a well-known practice.

Therefore, Claims 18-20 are independently and separately patentable.

It is not clear whether the Examiner is aware that the specification in fact discloses the use of the claimed methods to join the filter layers. If he is aware of the disclosure but believes that the disclosure is insufficient, the Examiner fails to explain why a person with ordinary skill in the art cannot use these well-known methods to join the filter layers without undue experimentation.

Therefore, reversal of the rejection is respectfully requested.

3. The specification provides sufficient guidance to one with ordinary skill in the art to determine the meaning of the claim language "predominantly cellulose containing filter paper" when the specification teaches that the cellulose content of cellulose containing filter paper can be 50% or more

The Examiner rejects claims 13, 15-22, and 35 under 35 U.S.C. 112, second paragraph, as being indefinite on the ground that the claim language "predominantly cellulose containing filter paper" is unclear.

The word "predominant" is defined as "having greatest importance, most common or conspicuous, main or prevalent" by *The American Heritage Dictionary of the English Language*, fourth Edition, published by Houghton Mifflin Company. This definition has clear meaning in the context of the claimed invention, i.e. the filter paper contains more cellulose than any other component.

In addition, the term "predominantly" is definite because the specification provides clear guidelines and examples that are sufficient for one with ordinary skill in the art to

determine what is a "predominantly cellulose containing filter paper." In *re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) (the claim language is not indefinite because the specification has provided a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine the meaning of the claim language). At page 3, the third full paragraph, the specification recites that "[t]he cellulose-containing filter papers can also have a foreign substance content of up to 50%..." In other words, the cellulose content of the cellulose containing filter paper is 50% or more. This means that the filter paper contains more cellulose than any other ingredient, considering that another ingredient must be less 50% because the filter paper inevitably contains certain amount of impurities. Therefore, the example given in the specification is consistent with the dictionary definition of the word "predominant," because the cellulose is the most common ingredient of the cellulose containing filter paper.

The Examiner fails to adequately explain why he considers the claim language "predominantly cellulose containing filter paper" as unclear. He fails to discuss the guidelines and examples provided in the specification, as required by *In re Marosi*.

Therefore, reversal of the rejection is respectfully requested.

4. A filter element comprising multiple layers having a successively decreasing storage capacity and including an inflow layer comprising a melt-blown, non-woven synthetic fiber web and a discharge layer comprising a compressed filter paper, is not rendered obvious by a reference or a combination of references which describe only filter media having different densities and different abilities to separate particles of

different sizes, but which fail to disclose filter layers having a decreasing storage capacity in the direction of flow, or an inflow layer comprising a melt-blown non-woven synthetic fiber web, or a discharge layer of compressed filter paper

The Examiner rejects claims 13, 15-19, 21, and 35 under 35 U.S.C. §103(a) as being unpatentable over *Kadoya* (U.S. Patent 4,976,858). The rejection is respectfully submitted to be erroneous.

The rejected claims recite a number of patentable features that are not disclosed or suggested by *Kadoya*. For example, claim 13 recites a filter element that includes filter layers having a decreasing storage capacity. This feature of claim 13 allows all the filter layers to store removed particles and helps to prolong the service life of the claimed filter element.

Kadoya does not disclose or suggest this feature. *Kadoya* discloses various embodiments of a filter medium 1. In a first embodiment shown in Figure 1, in a direction of flow, the filter medium 1 comprises a layer of non-woven fabric 5 and a layer of filter paper 2. In a second embodiment as shown in Figure 3, in a direction of flow, the filter medium 1 comprises two layers of non-woven fabric 5a, 5b and a layer of filter paper 2, with the upper layer 5a having a lower fiber density than the lower layer 5b. In a third embodiment as shown in Figure 5, in a direction of flow, the filter medium 1 comprises two layers 5a, 5b of non-woven fabric 5 and a layer of filter paper 2, the upper layer 5a having a higher fiber density than the lower layer 5b. In a fourth embodiment as shown in Figure 6, in a direction of flow, the filter medium 1 comprises three layers of non-woven fabric 5a, 5b, 5c having fiber densities which increase in the direction of flow, and a layer of filter paper 2.

Kadoya, however, does not disclose that any of the filter media have a decreasing storage capacity in the direction of flow. The Examiner alleges that Kadoya discloses this feature, citing column 3, lines 5-38. Applicants respectfully disagree. At the section cited by the Examiner, Kadoya discloses filter layers having different densities (i.e. different weights per unit area) measured in the unit of g/cm^3 (column 3, lines 5-10) and different abilities to separate particles of different sizes (column 3, lines 17-37). However, Kadoya does not teach that the filter layers have different storage capacities. The fact that the filter layers of Kadoya have different densities and different abilities to separate particles of different sizes does not mean that the filter layers inherently have different storage capacities. Other parameters, such as fibrous structure and fiber coarseness, can also affect the storage capacity of the filter layers (see the specification of the present application, the paragraph bridging pages 3 and 4). Applicants' position is supported by Dr. Klein's Declaration, in which he states that a filter layer's separation and storage capacity is affected by many factors, including specific weight, thickness, fibrous structure, and fiber coarseness. Accordingly, Kadoya does not teach filter layers having a decreasing storage capacity.

Claim 13 also recites that the inflow layer is comprised of synthetic fibers of a melt-blown non-woven web. Although the Examiner does not allege that Kadoya discloses or suggests this claim limitation, he states that the "melt-blown" limitation relates to a method of making a filter and carries no patentable weight in an apparatus claim. Applicants respectfully disagree, because the "melt-blown" limitation has important structural significance. According the present specification, a melt-blown nonwoven filter layer has very high storage capacity and low resistance to fluid flow through the

filter layer (see the paragraph bridging pages 3 and 4), structural features that are highly desirable in the claimed invention. Therefore, it is erroneous to state that the "melt-blow" limitation relates to a method of making a filter and carries no patentable weight in an apparatus claim.

Claim 13 further recites that the discharge layer is comprised of a compressed filter paper, which is not disclosed or suggested by *Kadoya*. The "compressed" limitation also has important structural significance. For example, at the paragraph bridging pages 4 and 5, the specification states

The good degree of separation of the finest filter layer is achieved here by compressing the fibers during the manufacturing process or by mechanical compression (calandaring) of the cellulose layer following the manufacturing process. It is especially advantageous in this context that compressed cellulose layers, even with very limited thickness, possess sufficient mechanical stability and hence a sufficient supporting function of the synthetic filter layer as well as sufficient mechanical strength of the entire filter system.

In view of the above discussion, claim 13 is patentable over *Kadoya*. Claim 35 recites the same features discussed above and therefore is also patentable over *Kadoya*. Additionally, claims 15-19 and 21 are patentable over *Kadoya* because they depend from claim 13.

D. The rejection of claim 20 under 35 U.S.C. §103(a) as being unpatentable over *Kadoya* in view of JP 63-278517 is improper

Since claim 20 depends from claim 13, it has a number of patentable features that are not disclosed or suggested by *Kadoya*. Further, the Examiner does not allege that these features are disclosed or suggested by JP 63-278517. Therefore, the Examiner has not established a prima facie case of obviousness with respect to claim 20, because the Examiner

has not established that the cited references disclose all elements of claim 20. In addition, the Examiner fails to provide any suggestion or motivation to combine the teachings of the cited references, because, contrary to Examiner's assertion, JP 63-278517 does not teach that polyethylene powder provides a secure bond. Therefore, claim 20 is patentable over the cited references.

E. The rejection of claim 22 under 35 U.S.C. §103(a) as being unpatentable over Kadoya and further in view of Pall (U.S. Patent 4,033,881) and Girondi (U.S. Patent 6,077,391) is likewise improper.

Since claim 22 depends from claim 13, it has a number of patentable features that are not disclosed or suggested by Kadoya. Further, the Examiner does not allege that these features are disclosed or suggested by Pall or by Girondi. Therefore, the Examiner has not established a prima facie case of obviousness with respect to claim 22, because the Examiner has not established that the cited references disclose all elements of claim 22. In addition, the Examiner fails to provide suggestion or motivation to combine the teachings of the cited references, because, contrary to Examiner's assertion, Pall and Girondi do not teach that the addition of class or polyester fibers optimize the filter for a particular application. Therefore, claim 22 is patentable over the cited references.

F. Conclusion

For the foregoing reasons, the rejection of claims 13, 15-22 and 35 under 35 U.S.C. 112, first paragraph, the rejection of claims 13, 15-22, and 35 under 35 U.S.C. 112, second paragraph, the rejection of claims 13, 15-22, and 35 under 35

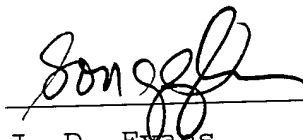
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U.S.C. §103(a), are submitted to be in error, and the Board is respectfully requested to reverse the rejections.

Respectfully submitted,

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Appendix

The claims on appeal as currently amended read as follows:

13. A filter element comprising a plurality of filter medium layers joined together such that a fluid to be filtered flows successively through the layers in a flow direction commencing with an inflow layer and ending with a discharge layer, wherein successive layers in said flow direction exhibit an increasing degree of separation and a decreasing storage capacity for particles to be filtered out of said fluid, and wherein said inflow layer is comprised of synthetic fibers of a melt-blown nonwoven web with a weight per unit area of approximately 15 to 150 g/m², and said discharge layer is comprised of a predominantly cellulose-containing compressed filter paper having a weight per unit area of about 50 to 200 g/m².

15. A filter element according to claim 13, wherein at least three filter medium layers are joined together; wherein the discharge layer is a predominantly cellulose-containing filter paper which serves primarily to stabilize the filter element; wherein all the other layers are nonwoven webs made of synthetic fibers, and wherein said other layers in the direction of flow through the filter successively exhibit an increased degree of separation and a decreased storage capacity for particles to be filtered out from the fluid flowing through the filter element.

16. A filter element according to claim 15, wherein an intermediate filter medium layer located between the inflow-side filter medium and the outflow-side filter medium comprises a compressed melt-blown nonwoven web having a weight per unit area of 15 to 150 g/m².

17. A filter element according to claim 13, wherein the filter media joined together to form the filter element are star-folded.

18. A filter element according to claim 13, wherein the layers of filter medium are welded together by ultrasound.

19. A filter element according to claim 13, wherein the layers of filter medium are joined together by surface pressure during a folding process.

20. A filter element according to claim 13, wherein the layers of filter medium are adhesively bonded together by gluing with powdered adhesive or with a hot melt impregnating agent.

21. A filter element according to claim 13, wherein at least one of the cellulose-containing filter layers includes up to 50% of synthetic fibers.

22. A filter element according to claim 21, wherein said synthetic fibers are polyester fibers or glass fibers.

35. A filter element comprising a plurality of filter medium layers joined together such that a fluid to be filtered flows successively through the layers in a flow direction commencing with an inflow layer and ending with a discharge layer, wherein successive layers in said flow direction exhibit an increasing degree of separation and a decreasing storage capacity for particles to be filtered out of said fluid, and wherein said inflow layer is comprised of synthetic fibers of a melt-blown nonwoven web with a weight per unit area of approximately 15 to 150 g/m² or of a predominantly cellulose-containing filter paper, with a weight per unit area of 50 to 200 g/m², and said discharge layer is comprised of a

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predominantly cellulose-containing compressed filter paper having a weight per unit area of about 50 to 200 g/m².